THE POROSITY CALCULATION OF VARIOUS TYPES OF PAPER WITH IMAGE ANALYSIS

N. H. Astuti[1.2.a*], M. R. S. S N. Ayub[1.2.b*], N. A. Wibowo[1.]

[1]Departement of physics, Faculty Of Science and Mathematics, Satya Wacana Christian University

[2]Departement of physics education, Faculty Of Science and Mathematics,Satya Wacana Christian University

E-mail: a) 642013002@student.uksw.edu

b) made.ray@staff.uksw.edu (corresponding author)

Diterima: xx bulan xxxx. Disetujui: xx bulan xxxx. Dipublikasikan: bulan xxxx

Abstract

Research on porosity of paper is done by observing in the microscopic surface of the paper by using the light microscope. Images viewed on a light microscope are being digital images. The image analyzed with image processing ImajeJ softwarefor various paper such as tissue paper, HVS, and filter paper. Obtain porosity of paper filter A = 51,50586 %, filter B = 18,30719 %, filter C = 21,68076 %, Filter D = 29,72028 %, tissue A = 9,17407 %, tissue B = 20,9693 %, tissue C = 32,76454 %, HVS A = 23,31616 %, HVS B = 27,70944 % .The highest probability is 51,50586 %, the lowest porosity is 9,174071 %. It can be concluded that the higher the value of the porosity of the paper means paper had large air cavities and has more fluid than other types of paper.

Abstrak

Penelitian penghitungan porositas kertas telah dilakukan dengan mengamati secara mikroskopik permukaan kertas dengan menggunakan mikroskop cahaya. Gambar yang dilihat pada mikroskop cahaya diubah menjadi gambar (citra) digital. Citra tersebut kemudian dianalisa dengan image processingperangkat lunak ImageJ.Dari hasil analisa citra untuk berbagai macam kertas seperti kertas tissue, HVS, dan kertas saring menggunakan analisa ImageJ. Didapatkan bahwa porositas kertas saring A = 51,50586%, saring B = 18,30719%, saring C = 21,68076%, saring D = 29,72028%, tissue A = 9,174071%, tissue B = 20,96931 %, tissue C = 32,76454%, HVS A = 23,31616%, HVS B = 27,70944%. Porositas tertinggi adalah 51,50586%, dan porositas terendah adalah9,174071%. Dapat disimpulkan bahwa semakin tinggi nilai porositas kertas maka kertas mempunyai rongga udara lebih besar dan mampu menyerap fluida lebih banyak.

.

Keywords: paper, porosity, imageJ.